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BURNS DOANE SWECKER & MATHIS L L P
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EXAMINER

KANG, JULIANA K

ART UNIT PAPER NUMBER

2874

DATE MAILED: 06/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/593,803

Applicant(s)

HIRAYAMA ET AL.

Examiner

Juliana K. Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 9, 11-15, 17 and 19-25 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 7, 8, 10, 16 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. Applicant's communication filed on March 29, 2002 has been carefully studied by the Examiner. The amendments made to claims required further search and new interpretation, especially for the recited limitations of wheel-less wiring head and wheel-less mechanism. Thus, this action is made **FINAL**.

Claim Objections

2. Claims 1, 2 and 3 are objected to because of the following informalities:

Regarding claim 1, line 9, the second occurrence of recited limitation of "an optical fiber" should be corrected to read "the optical fiber" since an optical fiber is already recited in line 3.

Regarding claim 2, line 3 recites the limitation "an optical fiber within an optical fiber path". It should be corrected to read "said optical fiber within said optical fiber path". Also in line 9, the recited limitation "optical fiber" should be corrected to read "said optical fiber".

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-3, 6, 9, 11-15, 17, and 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al (U.S. Patent 5,365,657).

Regarding claims 1, 2, and 6, Brown et al teach a wiring apparatus for wiring a substrate (12) comprising: a wheel-less wiring head 38 which guides a conductor (42) to a lead end thereof along what appears to be a guide groove (see Fig. 10F, even if it is not a groove, it would have been obvious to one with ordinary skill in the art to place a groove in Brown et al's wiring head to hold the wire in place so that the wire does not slip out from the wiring head.) through the which the conductor slides into position on the substrate, the guide groove extending partially along a length of the wiring head and forming an path for the conductor; a conductor feed means (40) which feeds the conductor during the wiring operation into the path of the wiring head; an conductor contacting means (56), which brings the conductor, which has been guided to the lead end of the wiring head via the wiring path, and the wiring substrate into contact, wherein the conductor contacting means includes the pressing means of pressing the conductor against the wiring substrate with a predetermined pressure (see column 10, lines 3-12); an XY movement means, which moves the wiring substrate and the wiring head relative to one another in the X and Y directions (see column 6 lines 36-39); and a conductor affixing means (see column 10 line 7). As described above, Brown et al teaches all the claimed limitation except the Brown et al's invention only discusses laying wire as a conductor even though in the specification and the claim 1 of Brown et al recites "a conductor". Some wires used in a printed circuit board are very small in diameter and thus, it would have been obvious to one with ordinary skill in the art to easily recognize the equivalent technique for laying optical fibers and wires.

Regarding claim 3, Brown et al certainly shows the guide groove (groove formed substantially on the side of the Brown et al's wiring head) and a pressure groove (groove formed on the bottom side of the Brown et al's wiring head).

Regarding claims 9, 13 and 14, even though Brown et al's invention teach the movement along Z-axis controlled by a Z-axis sensor and an actuator (see column 4 lines 60-62), it does not specifically teach the rotation of the Z-axial rotation means. However, Brown et al does teach that the typical scribing machine's wiring head may rotate about the Z-axis. Thus, it would have been obvious to one with ordinary skill in the art at the time the invention was made to apply Z-rotational means in Brown et al's invention to provide more flexibility of controlling the wiring head.

Regarding claim 11, the recited limitation of a part of wiring head that guides an optical fiber is made of a material having a lower coefficient of friction than the optical fiber would depend on what kind of optical fiber is used with the claimed apparatus. Using an optical fiber made of a higher coefficient of friction than the wiring head would meet the claimed limitation. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Regarding claim 12, since Brown et al's device can be used as an optical fiber wiring device as discussed above, the Brown et al's device would inherently meet the limitation of the wiring head of guiding portion having a radius of curvature larger than the radius of curvature causing breakage of an optical fiber. Note that Brown et al has a separate cutting device (16) and the head is not used to cut the conductor.

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Regarding claim 15, Brown et al teach a cutting means (16).

Regarding claim 17, Brown et al's device would inherently perform the claimed limitations.

Regarding claims 19-25, Brown et al teach all the claimed limitation including a wheel-less wiring mechanism (38), and an optical fiber plunger (56) providing pressing means (see column 10, lines 3-10). However, Brown et al's invention only discusses laying wire even though in claim 1 of Brown et al recites "a conductor". Some wires used in a printed circuit board are very small in diameter and thus, it would have been obvious to one with ordinary skill in the art to easily recognize the equivalent technique for laying optical fibers and wires. Brown et al further teach the wiring mechanism which moves in a direction of approach to or separation (see Figs 10A-10F and column 12 lines 38-45) from the wiring substrate (12). Brown et al also teaches that the plunger (56) is extended to the wiring head (10) (see column 9 line 66-12). When the plunger applies pressure, the wiring head presses down the wire. Brown et al's apparatus moves the substrate and the wiring head relative to one another in the XY directions (see column 6 lines 36-39). It appears that Brown et al's wiring head is formed with a spherical surface with a guide groove. Even if it does not have a groove, it would have been obvious to one with ordinary skill in the art to place a groove in Brown et al's wiring head to hold the wire in place so that the wire does not slip out from the wiring head. Since Brown et al's wiring head can be oriented in all of X, Y, and Z direction, Brown et al's wiring head would inherently orient in any direction including the claimed direction of tangent.

Allowable Subject Matter

5. Claims 4, 5, 7, 8, 10, 16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 4, there is no prior art (including the Brown et al reference, the closest prior art of record) that teaches or reasonably suggests an optical fiber wiring apparatus including the specifics of the wiring head which includes a smoothly widening lower end in the down ward direction as recited in claim 4 and any of its intervening claims.

Regarding claim 5, there is no prior art (including the Brown et al reference, the closest prior art of record) that teaches or reasonably suggests an optical fiber wiring apparatus including a deflection detection and a deflection maintaining means as recited in claim 5 and in any of its intervening claims.

Regarding claim 7, there is no prior art (including the Brown et al reference, the closest prior art of record) that teaches or reasonably suggests an optical fiber wiring apparatus including a reverse rotation prevention means which prevents back feeding of an optical fiber as set forth in claim 7 and in any intervening claims. Claim 8, which is depended on claim 7, is also allowable.

Regarding claim 10, there is no prior art (including the Brown et al reference, the closest prior art of record) that teaches or reasonably suggests an optical fiber wiring apparatus including the claimed range of pressure as set forth in claim 10 and any of its intervening claims.

Regarding claim 16, there is no prior art (including the Brown et al reference, the closest prior art of record) that teaches or reasonably suggests an optical fiber wiring apparatus including an electromagnetic slide, which moves the cutter in a direction crossing the optical fiber path as set forth in claim 16 and any of its intervening claims. It appears that the Brown et al's cutter moves in Z-axis direction (up and down) to cut the conductor.

Regarding claim 18, there is no prior art (including the Brown et al reference, the closest prior art of record) that teaches or reasonably suggests an optical fiber wiring apparatus including the optical fiber which is fed into the drop holes on the table which supports the wiring substrate and wherein the optical fiber is fed out outside of the wiring substrate as recited in claim 18 and any of its intervening claims.

Conclusion

6. Applicant's arguments with respect to claims 1-25 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within


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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (703) 305-6259. The examiner can normally be reached on Mondays and Thursday 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-3072.


Juliana Kang
June 10, 2002


Rodney Bovernick
Supervisory Patent Examiner
Technology Center 2800